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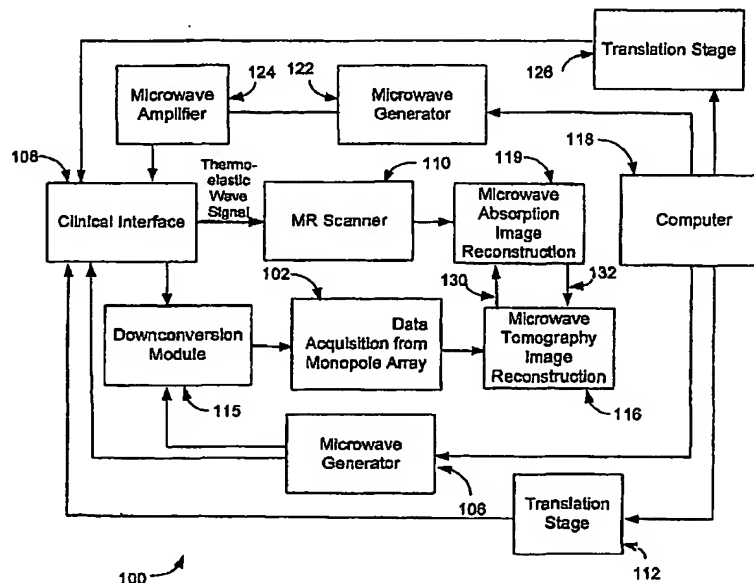
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[Continued on next page]

- (54) Title:** IMAGING BY MAGNETIC RESONANCE ADSORPTION, ELASTOGRAPHY AND TOMOGRAPHY



- (S7) Abstract:** A microwave imaging system provides superior breast imaging resolution by combining MR microwave absorption and MR-compatible microwave tomography calculations. These techniques may also be supplemented with magnetic resonance elastography calculations, for example, to facilitate quick multispectral imaging.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/30577

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61B5/055 G01R33/563 A61B8/08 G01N22/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7. A61B G01R G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	US 2002/115924 A1 (NIR DROR) 22 August 2002 (2002-08-22) paragraph [0005] claims 1,12,13 ----- -/--	1,2,6,7
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

13 September 2004

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/30577

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>MINGHUA XU ET AL: "RF-induced thermoacoustic tomography" SECOND JOINT EMBS-BMES CONFERENCE 2002. CONFERENCE PROCEEDINGS. 24TH. ANNUAL INTERNATIONAL CONFERENCE OF THE ENGINEERING IN MEDICINE AND BIOLOGY SOCIETY. ANNUAL FALL MEETING OF THE BIOMEDICAL ENGINEERING SOCIETY. HOUSTON, TX, OCT. 23 - 26, 2002, ANNUA, vol. 1 OF 3. CONF. 24, 23 October 2002 (2002-10-23), pages 1211-1212, XP010620033 ISBN: 0-7803-7612-9 item "Introduction"</p>	1,2,6,7
A	<p>MUTHUPILLAI R ET AL: "MAGNETIC RESONANCE ELASTOGRAPHY BY DIRECT VISUALIZATION OF PROPAGATING ACOUSTIC STRAIN WAVES" SCIENCE, AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE,, US, vol. 269, no. 5232, 29 September 1995 (1995-09-29), pages 1854-1857, XP000560135 ISSN: 0036-8075 the whole document</p>	1,2,6,7
A	<p>WEAVER JOHN B ET AL: "Magnetic resonance elastography using 3D gradient echo measurements of steady-state motion" MEDICAL PHYSICS, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 28, no. 8, August 2001 (2001-08), pages 1620-1628, XP012011543 ISSN: 0094-2405 item "II. Methods"</p>	1,2,6,7
A	<p>US 5 810 731 A (RUDENKO OLEG V ET AL) 22 September 1998 (1998-09-22) column 5, lines 37-53 column 6, lines 32-45</p>	1,2,6,7
A	<p>SCHWARZMAIER H-J ET AL: "MAGNETIC RESONANCE IMAGING OF MICROWAVE INDUCED TISSUE HEATING" MAGNETIC RESONANCE IN MEDICINE, ACADEMIC PRESS, DULUTH, MN, US, vol. 33, no. 5, 1 May 1995 (1995-05-01), pages 729-731, XP000620374 ISSN: 0740-3194 the whole document</p>	
A	<p>US 2002/119575 A1 (COLLINS MICHAEL J) 29 August 2002 (2002-08-29) paragraph [0046] paragraphs [0050] - [0052]</p>	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/30577

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-3, 6-7

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-3,6-7

Method and system for determining electromagnetic properties of an inhomogeneous target.

2. claims: 4,5

Method of determining electrical properties of an inhomogeneous target.

3. claims: 8, 9-14

Method and system for encoding motion within biological tissue.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/30577

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2002115924	A1	22-08-2002	US 2004059222 A1	25-03-2004
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